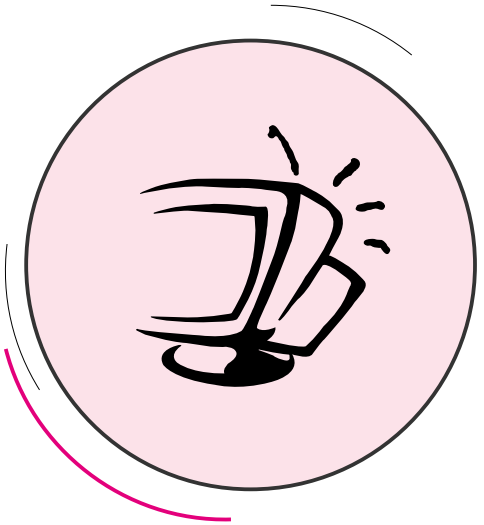
Hansol
Electronics

User's Manual

19 Inch (Viewable size 18″)

High Resolution Color Monitor

(E19AL)



Printed on the recyclable paper

Printed in Korea
Part No. 942159060001 - 01

FCC Information

This equipment has been tested and found to comply with limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment can generates, uses, and radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful inteference to radio Communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause unacceptable interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced Radio/TV technician for help.

DECLARATION OF CONFORMITY

PRODUCT NAME : 19" COLOR MONITOR
MODEL NUMBER : E19AL
FCC RULES : TESTED TO COMPLY WITH FCC PART 15, CLASS B
OPERATING ENVIRONMENT : FOR HOME OR OFFICE USE
FCC COMPLIANCE STATEMENT :
This device complies with part 15 of FCC Rules. Operation is subject to the following two conditions : (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

THE PARTY RESPONSIBLE FOR PRODUCT COMPLIANCE
HANSOL MULTITECH, INC.
7001, VILLAGE DRIVE, SUITE 255, BUENA PARK, CA. 90621, USA
TEL : (714)562-5151

English

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Caution

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canadian Notice

This Class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.

Avis Canadien

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Notice

The information contained in this document is subject to change without notice.

▣ Package

Congratulations on your purchase of this top quality color monitor!

The items illustrated below are contained in the carton.
First, be sure that your carton includes all of them.
If any items are missing or damaged, please contact your local dealer or supplier.

- Color Monitor
- AC Power input cable
- User's Manual

▣ Safety information

- Provided with this monitor is a detachable power supply cord with IEC320 style terminations. It may be suitable for connection to any UL listed personal computer with similar configuration. Before making the connection ensure that the voltage rating of the computer convenience outlet is the same as the monitor and that the ampere rating of the computer convenience outlet is equal to or exceeds the monitor current rating.
  For 120Volt applications use only UL listed detachable power cord with NEMA configuration 5-15P type(parallel blades) plug cap.
  For 240Volt applications use only UL listed detachable power cord with NEMA configuration 6-15P type(tandem blades) plug cap.
- Use only a power source and connection appropriate for the monitor as indicated on the marking label.
- Slots and openings in the cabinet are provided for ventilation;
  these openings must not be blocked or covered. Never push objects of any kind into cabinet slots or other openings.
- Never insert anything metallic into the monitor openings.
  Doing so may create a danger of electric shock.
- To avoid electric shock, never touch the inside of the monitor.
  Only a qualified technician should open the monitor's case.
- Unplug the monitor from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp, lint-free cloth for cleaning.
- Install the monitor near an outlet that you can reach easily. Disconnect the product by grasping the plug firmly and pulling in from the outlet.
  Never disconnect it by pulling the cord.

▣ Features

Superior image

- On Screen menu fingertip control system to visually select and adjust screen using buttons on front panel and on screen menus.
- The exclusive double dynamic focus system with a hyperbolic focus compensation circuit controls the electron beams resulting in a fine image display over the entire area of the screen.
- Super contrast screen for superior contrast and richer color.
- Advanced INVAR Shadow mask for superior focus, brightness and color.
- 19", 0.26dot pitch high resolution, non-interlaced technology provides sharp, flicker-free images.
- On screen menu color control system easily allows the white of the image to be adjusted as well as R.G. B signals, resulting in true-to-life colors.

Ergonomic Design

- Flat, square screen to reduce image distortion and glare, thus relieving eye strain.
- Tilt base allowing 90° rotation in the horizontal and 17° in the vertical for greater user comfort.
- Low-leak radiation prevention meeting MPR Ⅱ and the very stringent TCO (option) magnetic field emissions standards for increased user safety.

Environmentally Friendly

- Power management circuit conforming to VESA DPMS standards controls energy consumption when monitor is not in use, you save energy.
- All plastic parts are recyclable. All materials are strictly selected to ensure ease of maintenance, inspection and disposal.

Timing

- Automatic tracking of horizontal frequencies of 30 ~ 85 kHz,and vertical frequencies of 47 to 160 Hz.
- Ten timings are factory preset for image size and position
- Ten additional timings are user definable.
- Synchronizing input signals (separate, composite) can be automatically selected.

System Flexibility

- Equipped with DDC1, DDC2B and DDC2Bi for Plug & Play compatibility.
- Monitor is compatible with VGA, SVGA, VESA and high resolution video modes up to 1280(H) ×1024(V) @ 75Hz
- Monitor may be used with IBM or compatible PC, MAC.
- Automatic universal power supply is built in permitting AC power input of 100 - 240V AC, 50 or 60Hz.
- Self-test menu allows the display unit to be checked on screen without connecting to a computer.
- Compact case minimizes desktop space giving you a large screen image without loss of workspace.
- Power cable included easily plugs into a standard outlet.

▣ Power management system

This monitor complies with VESA, Nutek, and Energy Star power saving requirements. The power saving system works only when used with VESA DPMS compliant PC's and/or graphic controllers.

State	LED	Power	Recovery Time
On	Green	Normal (95 Watts)	N/A
Stand by	Green	< 65 Watts	< 2 Sec
Suspend	Amber	< 15 Watts	< 5 Sec
Off	Amber/Blink	< 8 Watts	< 15 Sec

The monitor goes into various power saving stages depending on the incoming video signal as shown in the following table

State	Horizontal Sync	Vertical Sync
On	On	On
Stand by	Off	On
Suspend	On	Off
Off	Off	Off

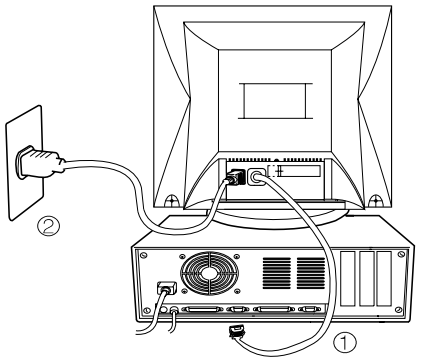
Note

The monitor automatically goes through the DPMS steps when it is idle.
To release the monitor from the DPMS condition, press any key on the keyboard or mouse.

▣ Connection to your computer

⚠ **CAUTION**

Ensure that both the PC and the display monitor are switched off.



To attach the monitor to your system, as shown in the following illustrations.

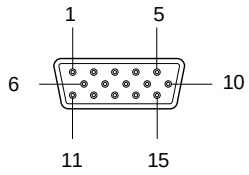
1. Insert the AC power cord ② into monitor and then into an AC power outlet.
2. Connect the signal cable ① to the 15pin graphics connector of the system and tighten the fastening screws.
3. To turn on the monitor, push the power switch.

Note : To attach the monitor to the Macintosh system, please contact an authorized dealer.(Need to use a special adaptor)

▣ Pin assignment table D-Sub Mini 15pin connector

Pin No.	Assignment
1	Red Video
2	Green Video
3	Blue Video
4	Frame Ground
5	Ground
6	Red Video Ground
7	Green Video Ground
8	Blue Video Ground
9	N.C
10	Sync. Ground
11	Ground
12	SDA
13	H-Sync.
14	V-Sync.
15	SCL

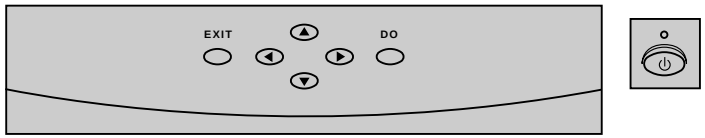
The 15-pin D-Sub connector (male) of the signal cable (IBM Systems) :



(15 Pin D-Sub)

▣ OSD controls

"ON SCREEN DISPLAY MENU" controls include the following extended controls such as Size, Position, Geometry, Color Adjust, Brightness and Contrast Utilities. Adjustments are saved instantly. The currently addressed control can be reset to factory settings by pressing the Reset button.



Function of OSD buttons on the front of the monitor

- DO : Displays OSD main Menu.
  1) When Main menu is displayed. : Selects function with RED ICON.
  2) When Submenu is displayed. : Selects function with RED ICON.
- ◀ ▼ ▲ ▶
  1) When no OSD on the Screen,
     · In the main menu, move the function to select one of the controls.
     · In submenu, adjust the bar to increase or decreases the adjustment.
  2) When no OSD on the Screen,
     ◀ / ▼ : Direct Brightness access.
     ▲ / ▶ : Direct Contrast access.

Additional front controls

- Power Switch : Turns the monitor power on or off. When the power is on, the LED is on.
- LED Power indicator Light : Located up side of the power switch and indicates the monitor's power mode. Each mode reduces the amount of power used by the monitor.

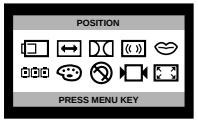
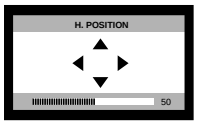
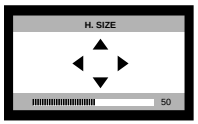
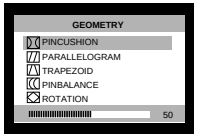
Accessing on screen menu

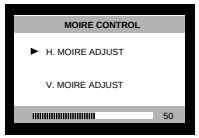
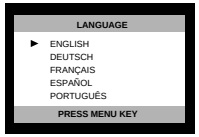
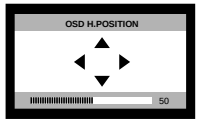
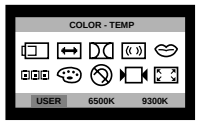
Press DO Button.

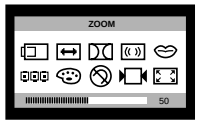
Turning off on screen menu

When in the main menu, press the EXIT button.
When in submenus, press the EXIT button twice.

▣ OSD Menu

OSD MENU	DO	◀ ▼	▲ ▶	EXIT
1. NO OSD	Proceeds to NO.2	Proceeds to NO.3	Proceeds to NO.4	No meaning
2. MAIN MENU 	The function with RED ICON is - Performed : Recall, Degauss - Selected and blinked : Color Adjust, Zoom - Proceeded : Others	Moves to function you want.		Exit to No.1
3. BRIGHTNESS	Moves to No.2	Decreases the brightness	Increases the brightness	Exit to No.1
4. CONTRAST	Moves to No.2	Decreases the contrast	Increases the contrast	Exit to No.1
5.H/V-POSITION 	Proceeds to NO.6	Moves the image down or left in the selected function.	Moves the image up or right in the selected function.	Exit to No.2
6. H/V-SIZE 	Proceeds to NO.5	Shrinks the image in the selected function.	Expands the image in the selected function.	Exit to No.2
7.GEOMETRY 	No meaning	Controls the amount of the Selected funcion. (Refer to Geometry controls menu in detail) Moves to function you want.		Exit to No.2

OSD MENU	DO	◀ ▼	▲ ▶	EXIT
8. MOIRE 	No meaning	Contros the amount of selected function. Please control these key in order the image not to shiver.		Exit to No.2
		Moves to function you want.		
9. LANGUAGE 	Selects the languages with RED ICON and Exit to No.2	Moves to language you want.		Exit to No.2
10. OSD POSITION 	No meaning	Moves the OSD menu left or down in the selected function.	Moves the OSD menu right or up in the selected function.	Exit to No.2
11. COLOR MODE 	Odd press : Blinks the RED ICON - color menu ICON.	Moves to color mode you want and the selected “color mode” will blink.		Exit to No.1
	Even press : Stops blinking and ready to move function you want.	Moves to function you want.		Exit to No.1
	When the color mode ICON is blinking in user mode, press, then go to color adjust mode No.12.	–	–	–
12. COLOR ADJUST MODE RB - Red background raster GB - Green background raster BB - Blue background raster RG - Red level gain GG - Green level gain BG - Blue level gain	No meaning	Controls the amount of function you want.		Exit to No.11
		Moves to the function you want.		

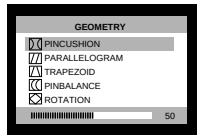
OSD MENU	DO	◀ ▼	▲ ▶	EXIT
13. ZOOM 	Odd press : Selects zoom and blinks the zoom ICON.	Shrinks the image horizontally and vertically.	Expands the image horizontally and vertically.	Exit to No.1
	Even press : Stops blinking and ready to move another function.	Moves to the function you want.		Exit to No.1

■ Recall ( ) : Recall control to the factory setting resets all the controls within the all menu. If you want to return to the factory mode setting, press Recall key 5~8 Sec continuously.

■ Degauss ( ) : Eliminates the build-up of stray magnetic fields which alter the correct scan of the electron beams and affect the purity of the screen colors, focus, and convergence. When pressed, you screen image will jump and waver a bit as the screen is demagnetized.

⚠Caution : Please allow a minimum of 20 minutes to elapse between uses of the Degauss button. Do not hold the button down continuously to avoid decreasing the life the Deguass circuitry.

※ Geometry Controls Menu



The Geometry controls allow you to adjust the curvature or angle of the sides of you display.

■ Pincushion : Increases or decreases the curvature of the sides either inward or outward.
■ Parallelogram : Increases or decreases the tilt of the sides either to the left or right.
■ Trapezoid : Increases or decreases the bottom of the screen to be the same as the top.
■ Pin Balance : Increases or decreases the curvature of the sides either to the left or right.
■ Rotation : Increases or decreases the tilt of the screen image relative to a horizontal line.

▣ No picture

- Check that the AC cord is correctly connected.
- Check that the AC socket is live by plugging in another piece of equipment.
- Power switch and computer power switch should be in position.
- Ensure that the signal cable is properly connected to the video card or PC.
- Ensure that the video card is securely seated in the PC.
- Check the connector for bent or pushed-in pins.
- Press a key on the keyboard or move the mouse, in case the screen power-saver mode has blanked the screen.

▣ Image is scrolling or unstable

- Signal cable should be securely attached to the computer.
- Check the pin assignments and signal timings of the monitor and your video card with respect to recommended timings and pin assignments.
- Ensure that the video card is securely seated in the PC.

▣ Picture is fuzzy

- Adjust the Contrast and Brightness Controls.
- Push the Degauss Button once.

Caution : A minimum interval of 20 minutes should exist before the Degauss Button is used a second time. Do not hold the button down continuously.

▣ Picture bounces or a waving pattern is present in the picture

- Move electrical devices that may be causing electrical interference away from the monitor.
- See the inside front cover of this manual for FCC information.
- Unshielded audio speakers placed next to the monitor can cause picture distortion. Move the speakers away.

▣ Edges of the display image are not square

- Adjust the distortion using the Side Pincushion or Trapezoid Pincushion Balance, Parallel adjustment controls under the on screen menu.

▣ Display image is not centered, too small, or too large

- Adjust the horizontal and vertical image sizes using the Horizontal and Vertical Size adjustment controls under the on screen menu.

▣ Electrical Specifications

ITEM		E19AL
CRT Type		19″, 90° deflection FST
CRT Dot pitch		0.26mm
CRT Surface		Non-glare
Input Signal	Sync	H/V Separate, TTL, positive/negative H/V Composite, TTL, positive/negative
	Video	RGB Analog (0.7Vp-p), positive 75 Ω Terminated
Scanning frequency	Horizontal	30KHz~85KHz (Automatically)
	Vertical	47Hz~160Hz (Automatically)
Maximum Resolution		1280Dots ×1024Lines (75Hz)
Pixel Clock(Max.)		135 MHz
Display Size (Standard)		Horizontal 350mm, Vertical 262mm
Power Consumption(Max.)		110 Watts
Power Supply		AC 100~240Volt, 50/60Hz ±3Hz
Input Connector		D-Sub, 15Pin Connectors
Display Colors		Unlimited

▣ Mechanical Specifications

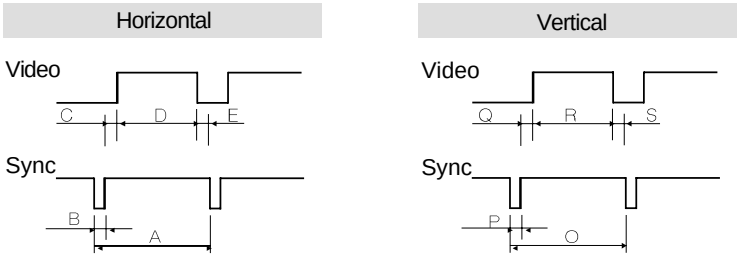
ITEM		E19AL
Dimension	Unit	18.5″(W) ×18.9″(D) ×18.5″(H) 470mm(W) ×487mm(D) ×470mm(H)
	Carton	21.6″(W) ×22.6″(D) ×22.4″(H) 548mm(W) ×574mm(D) ×568mm(H)
Weight	Net	45.4lbs (20.6Kg)
	Gross	52.7lbs (23.9Kg)

▣ Environmental Specifications

ITEM		E19AL
Temperature	Operating	32°F to 104°F (0°C to 40°C)
	Storage	-4°F to 140°F (-20°C to 60°C)
Humidity		10% to 85% R.H. Non-condensing

▣ Preset Timings

This Monitor E19AL has preset modes for the 10most popular industry standards for "Plug and Play" capability.



Resolution / Timing	IBM		VESA		
	VGA/70Hz	VGA/60Hz	640/85Hz	800/75Hz	800/85Hz
	720 ×400	640 ×480	640 ×480	800 ×600	800 ×600
H-Freq(kHz)	31.469	31.469	43.269	46.875	53.674
A㎲ec	31.777	31.777	23.111	21.333	18.631
B㎲ec	3.813	3.813	1.556	1.616	1.138
C㎲ec	1.907	1.907	2.222	3.232	2.702
D㎲ec	25.422	25.422	17.778	16.162	14.222
E㎲ec	0.636	0.636	1.556	0.323	0.569
V-Freq(Hz)	70.09	59.94	85.008	75	85.061
Omsec	14.268	16.684	11.764	13.333	11.756
Pmsec	0.064	0.064	0.069	0.064	0.056
Qmsec	1.08	1.048	0.578	0.448	0.503
Rmsec	12.711	15.253	11.093	12.8	11.179
Smsec	0.413	0.318	0.023	0.021	0.019
Pixel rate(MHz)	28.322	25.175	36	49.5	56.25
H-Polarity	Negative	Negative	Negative	Positive	Positive
V-Polarity	Positive	Negative	Negative	Positive	Positive

Resolution / Timing	VESA			MACINTOSH	
	1024/75Hz	1024/85Hz	1280/75Hz	640/67Hz	832/75Hz
	1024 ×768	1024 ×768	1280 ×1024	640 ×480	832 ×624
H-Freq(kHz)	60.023	68.677	79.976	35	49.726
A㎲ec	16.660	14.561	12.504	28.571	20.11
B㎲ec	1.219	1.016	1.067	2.116	1.117
C㎲ec	2.235	2.201	1.837	3.175	3.91
D㎲ec	13.003	10.836	9.481	21.164	14.524
E㎲ec	0.203	0.508	0.119	2.116	0.559
V-Freq(Hz)	75.029	84.997	75.025	66.667	74.551
Omsec	13.328	11.765	13.329	15	13.414
Pmsec	0.050	0.044	0.038	0.086	0.06
Qmsec	0.466	0.524	0.475	1.114	0.784
Rmsec	12.795	11.183	12.804	13.714	12.549
Smsec	0.017	0.015	0.013	0.086	0.02
Pixel rate(MHz)	78.750	94.5	135	30.24	57.284
H-Polarity	Positive	Positive	Positive	Negative	Negative
V-Polarity	Positive	Positive	Positive	Negative	Negative